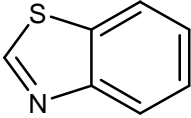


6	CAS No.: 95-16-9	Substance: Benzothiazole
<p>Chemical Substances Control Law Reference No.: 5-3426</p> <p>PRTR Law Cabinet Order No.:</p> <p>Molecular Formula: C₇H₅NS Structural formula:</p> <p>Molecular Weight: 135.19</p> <div style="text-align: center;">  </div>		
<p>1. General information</p> <p>The aqueous solubility of this substance is 4.30×10^3 mg/L (25°C), the partition coefficient (1-octanol/water) (log K_{ow}) is 2.01, and the vapor pressure is 0.074 mmHg (=9.9 Pa) (25°C, calculated value). The biodegradability (aerobic degradation) is characterized by a BOD degradation rate of 0%, and bioaccumulation is thought to be nonexistent or low.</p> <p>The main use of benzothiazoles is addition to rubber as a vulcanizer and antioxidant. The substance was removed from the Class 2 Designated Chemical Substance list as a result of the revision of substances regulated by the Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management (PRTR Law) enacted on October 1, 2009. The production and import category under the PRTR Law was 1 to <100 t.</p> <p>-----</p> <p>2. Exposure assessment</p> <p>Because this substance is not classified as a Class 1 Designated Chemical Substance under the PRTR Law, release and transfer quantities could not be obtained. Predictions of distribution by medium using a Mackay-type level III fugacity model indicated that if equal quantities were released to the atmosphere, water bodies, and soil, the proportion distributed to soil would be greater.</p> <p>The predicted environmental concentration (PEC), which indicates exposure to aquatic organisms, is around 0.45 µg/L for public freshwater bodies and generally less than 0.087 µg/L for seawater.</p> <p>-----</p> <p>3. Initial assessment of ecological risk</p> <p>With regard to acute toxicity, the following reliable data were obtained: a 72-h EC_{50} of more than 45,800 µg/L for growth inhibition in the green algae <i>Pseudokirchneriella subcapitata</i>, a 48-h EC_{50} of 19,000 µg/L for swimming inhibition in the crustacean <i>Daphnia magna</i>, and a 96-h LC_{50} of 39,000 µg/L for the fish species <i>Oryzias latipes</i> (medaka). Accordingly, based on these acute toxicity values and an assessment coefficient of 100, a predicted no effect concentration (PNEC) of 190 µg/L was obtained.</p> <p>With regard to chronic toxicity, the following reliable data were obtained: a 72-h NOEC of 8,450 µg/L for growth inhibition in the green algae <i>P. subcapitata</i> and a 21-d NOEC of 1,500 µg/L for reproductive inhibition in the crustacean <i>D. magna</i>. Accordingly, based on these chronic toxicity values and an assessment coefficient of 100, a predicted no effect concentration (PNEC) of 15 µg/L was obtained. The value of 15 µg/L obtained from the chronic toxicity to the crustacean was used as the PNEC for this substance.</p> <p>The PEC/PNEC ratio was 0.03 for freshwater bodies and less than 0.006 for seawater. Accordingly, further work is thought to be unnecessary at this time.</p>		

Hazard assessment (basis for PNEC)			Assessment coefficient	Predicted no effect concentration PNEC (µg/L)	Exposure assessment		PEC/PNEC ratio	Judgment based on PEC/PNEC ratio	Assessment result
Species	Acute/chronic	End point			Water body	Predicted environmental concentration PEC (µg/L)			
Crustacean <i>Daphnia magna</i>	Chronic	NOEC Reproductive inhibition	100	15	Freshwater	0.45	0.03	○	○
					Seawater	<0.087	<0.006		

4. Conclusions

	Conclusions	Judgment
Ecological risk	No need of further work at present	○

[Risk judgments] ○: No need for further work ▲: Requiring information collection
 ■: Candidates for further work ×: Impossibility of risk characterization
 (○) : Though a risk characterization cannot be determined, there would be little necessity of collecting information.
 (▲) : Further information collection would be required for risk characterization.